

Chemical Control of Nursery Pests

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Bee warning Read carefully before applying any material selected for use. Many insecticides are highly toxic to honeybees. Some should not be applied any time during bloom, while many others should be applied only in the early morning hours and/or late in the evening. Avoid spraying carbaryl and diazinon on plant surrounded by blooming flowers or weeds. Always take simple steps, such as removing (mowing) blooming clover from lawns adjacent to garden areas before applying materials that are hazardous to bees. In all cases, when given the choice, select the least hazardous material when plants in the infested vicinity are in bloom. Avoid using dusts wherever possible; spray formulations are preferred for bee safety.

Protect pollinators: See How to Reduce Bee Poisoning from Pesticides.

Note: Products are listed by alphabetical order and not in order of preference or superiority of pest control.

For greenhouse plant see:

Greenhouse Ornamental Pests

Characteristics of Insecticides

Using pyrethroid insecticides is associated with subsequent spider mite outbreaks: monitor plant closely after you use these materials.

Pesticides available for use in commercial nursery applications			
Active ingredient	Trade name (examples)	Chemical class	Typical use pattern
abamectin	Avid, Lucid	acyclic lactone	translaminar systemic
acephate	Acephate, Orthene	organophosphate	foliar systemic
acequinocyl	Shuttle	nathoquinone	spider mite
acetamiprid	Tristar	chloro-nicotinyl	whitefly, aphid, adelgid, scale, psyllid, mealybug, leafhopper, thrips, leafminer, plant bug, leaf-eating beetles, fungus gnat larvae, borers
acetate	Isomate P Pheromone	pheromone	peachtree borer management
afidopyropen	Ventigra	pyridine azomethines	aphid, mealybug, whitefly, scale
alpha-cypermethrin	Fendona	sodium channel modulator	liquid application/ground application
azadirachtin	Amazin (organic) Azatin, Aza-Direct (OMRI), Azatrol (OMRI) Ornazin	terpenoid: insect growth regulator	immature stages of insects antifeedant, biopesticide.
<i>Bacillus thuringiensis</i>	various (organic labels available)	microbial	specific, depends on variety; biopesticide

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<i>Beauveria bassiana</i>	Botanigard, Mycotrol, Velifer	fungus	whitefly, aphid, psyllid, thrips, weevil, mealybug, beetles
bifenazate	Floramite	carbazate	spider mite—good coverage is especially important; compatible with predacious mite.
bifenthrin	Talstar, Wisdom, many labels	pyrethroid	general, check the label; most are restricted use pesticides.
buprofezin	Talus	insect growth regulator	scale, whitefly, mealybug, leafhopper, pear psylla acts on immature stages.
<i>Burkholderia</i> spp.	Venerate XC (OMRI)	bioinsecticide	loopers, aphids, mites, thrips, whiteflies, armyworms, twig borers, leafrollers, webworm, mealybugs, scale
canola oil	Mighty, Captiva, Pycana	botanical oil	flea beetles, fungus gnat, whitefly, caterpillars, scale, thrips, lygus, psylla, aphid, spider mites
carbaryl	Carbaryl 4L - Sevin	carbamate	general, check label for pest list.
chlorantraniliprole	Acelepryn	anthranilic diamide	caterpillar, Japanese beetle, white grub
chlorfenapyr	Pylon	pyrroles	spider mites, thrips, fungus gnats, caterpillars
chlorpyrifos	Vulcan, Whirlwind	acetylcholinesterase inhibitor	aerial, ground and irrigation applications
<i>Chromobacterium</i>	Grandevo	microbial	general, check the label for pest list.
cinnamaldehyde	Seican		borer, plant bug, mite, lepidoptera, scale, lygus, mealybug, thrips, fungus gnat,
cinnamon oil	Gargoil, Canelys	horticultural oil	fungicide and insecticide; applied as a liquid
citronella/farneson/geraniol/nerolidol	Biomite	botanical	mite
clofentezine	Ovation	tetrazine	spider mite
clothianidin	Arena	neonicotinoid	aphid, mealybug, whitefly, adelgid, lacebug, leaf beetle, psyllid, root

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			weevils, systemic
corn oil	Circadian Sunrise		rust mite, whitefly, leafhopper, spider mite, aphid, mealybug
cottonseed oil	Furious	mineral oil	spray control, broad spectrum
cryolite	Cryolite Bait	inorganic	weevils
cyantranilprole	Mainspring	raynoid	plant bug, lepidoptera, soft scale, thrips, whitefly, Japanese beetle
cyclanilprole	Sarisa	diamide	adelgid, aphid, borer, lace bug, leafminer, mealybug, midge, psyllids, root weevil, sawfly, soft scale, thrips, Japanese beetle
cyclanilprole/flonicamid	Pradia	diamide	adelgid, aphid, borer, lace bug, leafminer, mealybug, midge, psyllids, root weevil, sawfly, soft scale, thrips, stinkbug
cyflumetofen	Sultan Miticide	nitrile	mites
cyfluthrin	Decathlon	pyrethroid	general – check the label; restricted use pesticide.
cyfluthrin/imidacloprid	Discus	pyrethroid/neonicotinoid	general – check the label; combination product; systemic; restricted use pesticide.
cyhalothrin-gamma	Declare	pyrethroid	deciduous shade tree ornamental general use, check the label
cypermethrin	Enforcer	pyrethroid	ant, silverfish, sowbug, earwig, spider, tick greenhouse, seed house, and commercial building treatments; restricted use pesticide.
cyromazine	Citation	triazine: insect growth regulator	acts on immature fungus gnat, leaf miner, shore fly.
diazinon	Diazinon	organophosphate	general; restricted use pesticide.
diflubenzuron	Dimilin 4L, Adept, Diflumax	benzyl phenyl urea: insect growth regulator	acts on immature stages, conifer nursery lepidopteran pests; restricted use pesticide.
dimethoate	Dimethoate	organophosphate	general – check the label; systemic.

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dinotefuran	Safari	neonicotinoid	aphid, adelgid, mealybug, whitefly, fungus gnat, weevil, psyllid, bagworm, borer, Japanese beetle, thrips, scale; systemic.
emamectin benzoate	Tree-age, Mectinite	benzoate	aphid, leafminer, sawfly, borer, mites, lepidoptera; conifer and forest nursery, ornamentals and seed orchards
esfenvalerate	Fenvastar EcoCap, Asana, Ztrate	pyrethroid	spiders, scorpions, check the label for other pests.
ethoprop	Mocap	organophosphate	nematode, symphylan, field nurseries only, pre-plant only: easter lilies (Curry County, OR); SLN OR-120005.
etoxazole	TetraSan	oxazolin; insect growth regulator	spider mite
fenazaquin	Magus Miticide	quinazoline	spider mite, whitefly
fenbutatin oxide	Vendex, Meraz	organotin	spider mite
fenpropathrin	Tame 2.4 EC	pyrethroid	general – check the label; restricted-use pesticide
fenpropathrin/acephate	Tame/Orthene TR	pyrethroid, organophosphate	lepidoptera, spider mite, lace bug, whitefly, fungus gnat, scale, thrips, aphid, mealybug, lygus
fenpyroximate	Akari	phenoxyproprazole	spider mite, broad mite, cyclamen mite, eriophyid mite, mealybug
flonicamid	Aria Insecticide	pyridinecarboxamide	aphid, thrips, whitefly, scale leafhopper, mealybug, plant bug
flupyradifurone	Altus	butenolides	leafminer, leafhopper, mealybug, lace bug, scale, whitefly, aphid, psylla
geraniol	Keyplex Ecotrol Plus	botanical	mite, thrips, leaf miner, aphid, mealybug, leafminer, armyworm, flea beetle, fungus gnat, scale
GS-omega/kappa-HXTX-HV1A	Spear-Lep	fatty acid	tomato hornworm, omnivorous leafroller, armyworm, looper
hexythiazox	Hexagon	organosulfur	spider mite, ovicidal, larvicidal

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hydramethylnon	Amdro, MaxForce	trifluoromethyl aminohydrazone	ant, cockroach, earwig, silverfish
imidacloprid	Imidacloprid, Marathon	chloronicotinyl	general – check the label; systemic
indoxacarb	Advion Fire Ant Bait	carbamate	fire ant
iron phosphate	Bug-N-Sluggo		slug, snail
<i>Isaria fumosorosea</i> strain 97	Preferal Microbial Insecticide, Ancora	microbial	general – check the label
lambda-cyhalothrin	Cyonara , Scimitar GC	pyrethroid	general – check the label; restricted use pesticide
malathion	Malathion 5EC, Fyfanon,	organophosphate	check the label for non-tolerant plants
metaflumizone	Siesta Insecticide Fire Ant Bait	semicarbazones	fire ant
<i>Metarhizium anisopliae</i> strain 52	Met 52, Tick-Ex EC	biological, fungus	root weevil grubs, mite, whitefly, thrips
methiocarb	Mesurool	carbamate	slug, snail, aphid, thrips; restricted use
methoxyfenozide	Intrepid 2F	diacylhydrazine	caterpillar
mineral oil, petroleum distillate	Various	oil	soft-bodied pests
neem oil, clarified hydrophobic extract	Triact (OMRI), Ecoworks EC	botanical oil	fungicide, miticide, insecticide, whitefly, mealybug, aphid, leafhopper
novaluron	Pedestal	benzoylphenyl urea	whitefly, thrips, leafminer, armyworm; insect growth regulator
oil of rosemary/peppermint	Ecotec Broad Spectrum (OMRI)	botanical/botanical oil	aphid, beetle, caterpillar, fungus gnat, shorefly, leafhopper, leafminer, mite, soft scale
permethrin	Permethrin, Loveland, Arctic many labels	pyrethroid	general – check the label; most are restricted-use pesticides
phosmet	Imidan	organophosphate	birch leafminer, slug, gypsy moth, Japanese beetle, tent caterpillar, mealybug
phosphorus acid	Mite-Phite		spider mite

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piperonyl butoxide	Evergreen, Pyronyl	sodium channel modulator	multiple applications available; general insecticidal use
polyhedral occlusion bodies	Helicovex		tomato fruitworm, budworm, corn earworm
potassium laurate	M-Pede, Insecticidal Soap (several OMRI, organic)	soap	general, contact only, no residual.
potassium silicate	SIL-Matrix		aphid, mite, whitefly
propargite	Omite	organosulfur	mite
propyleneglycol monolaurate	Acaritouch	fatty acid monoester	spider mite – good contact required.
pymetrozine	Endeavor	triazine	aphid, whitefly
pyrethrins/piperonyl butoxide (PBO)	PT 1600 X-clude, PT Pyrethrum TR	pyrethrins/synergist	general – check the label.
pyrethrins/canola	PyGanic Dust (OMRI), Mighty	pyrethrins	general – check the label.
pyridaben	Sanmite	pyridazinone	spider mite, whitefly
pyridalyl	Overture	unclassified	lepidoptera, thrips
pyriproxyfen	Defiance	juvenile hormone mimic	labeled for use in nursery greenhouses only
sodium borate complex	Prev-Am Ultra	inorganic	aphid, leafhopper, lygus, mealybug, mite, thrips, whitefly, scale
soybean oil	Golden Pest Spray Oil		spider mite, fungus gnat, lace bug, whitefly, leafminer, scale, aphid, mealybug
spinetoram, sulfoxaflor	Xxpire	spinosyns	bagworm, looper, spider mite, tussock moth, lacebug
spinosad	Conserve, Entrust	fungal metabolite	thrips, caterpillar, midge
spiromesifen	Savate Miticide	ketoenole	spider mite, broad mite, cyclamen mite, false spider mite, eriophyid mite, whitefly
spirotetramat	Kontos	tetramic acid	aphid, adelgid, whitefly, rust mite, spider mite, psyllid, spittlebug, mealybug, leafhopper, thrips; systemic chemistry

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sulfoxaflor	Transform	nicotinic acetetylcholine receptor modulator	available as a spray powder for various applications
tau-fluvalinate	Mavrik Aquaflow	pyrethroid	general, container stock only
tebufenozide	Mimic	hydrazine, IGR	acts on moth immature stages.
thiamethoxam	Flagship	neonicotinoid	beetle grub, aphid, whitefly, mealybug
zeta-cypermethrin	Amdro Quick Kill	sodium channel modulator	liquid/ground application